Decision Time Frames

Topic: Short Run
Skill: Recognition
1) The short run is a period of time in which
   A) the quantities of some resources the firm uses are fixed.
   B) the amount of output is fixed.
   C) prices and wages are fixed.
   D) nothing the firm does can be altered.
Answer: A

Topic: Short Run
Skill: Recognition
2) The short run is a period of time in which
   A) the quantity used of at least one resource is fixed.
   B) the quantities used of all resources are fixed.
   C) output prices are fixed.
   D) resource prices are fixed.
Answer: A

Topic: Short Run
Skill: Recognition
3) The short run is a time frame in which
   A) the quantities of some resources are fixed and the quantities of other resources can be varied.
   B) the quantities of all resources can be varied.
   C) the quantities of all resources are fixed.
   D) all costs are sunk costs.
Answer: A

Topic: Short Run
Skill: Conceptual
4) An example of a variable resource in the short run is
   A) a building.
   B) capital equipment.
   C) an employee.
   D) land.
Answer: C

Topic: Sunk Cost
Skill: Recognition
5) A cost that has already been made and cannot be recovered is called a
   A) variable cost.
   B) fixed cost.
   C) sunk cost.
   D) marginal cost.
Answer: C

Topic: Long Run
Skill: Recognition
6) The long run is a time frame in which
   A) the quantities of some resources are fixed and the quantities of other resources can be varied.
   B) the quantities of all resources can be varied.
   C) the quantities of all resources are fixed.
   D) all costs are sunk costs.
Answer: B

Topic: Long Run
Skill: Conceptual
7) In the long run, a firm can vary
   A) its capital but not its labor.
   B) its labor but not its capital.
   C) both its labor and its capital.
   D) neither its labor nor its capital.
Answer: C

Topic: Long Run
Skill: Recognition
8) The long run is distinguished from the short run in that, in the long run,
   A) output prices can vary.
   B) resource prices can vary.
   C) the quantities of all resources can be varied.
   D) the firm no longer maximizes its profit.
Answer: C
Short-Run Technology Constraint

**Topic: Marginal Product of Labor**
**Skill: Analytical**

9) The marginal product of labor is the increase in total product from
   A) one unit increase in the quantity of labor, while holding the quantity of capital constant.
   B) one unit increase in the quantity of labor, while also increasing the quantity of capital by one unit.
   C) one dollar increase in the wage rate, while holding the price of capital constant.
   D) one percent increase in the wage rate, while also increasing the price of capital by one percent.

**Answer:** A

**Topic: Marginal Product of Labor**
**Skill: Recognition**

10) The marginal product of labor is the change in total product from a one-unit increase in
   A) the quantity of labor employed, holding the quantity of capital constant.
   B) the quantity of capital employed, holding the quantity of labor constant.
   C) both the quantity of labor and the quantity of capital employed.
   D) the wage rate.

**Answer:** A

**Topic: Marginal Product of Labor**
**Skill: Conceptual**

11) The marginal product of labor is the
   A) change in output resulting from a one-unit increase in labor.
   B) maximum output attainable with fixed factors when labor is the only variable factor.
   C) output level above which the slope of the total product curve falls.
   D) output level above which the rate of total product per unit of labor falls.

**Answer:** A

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**Topic: Average Product of Labor**
**Skill: Conceptual**

12) The average product of labor is
   A) the inverse of the average product of capital.
   B) the slope of the curve showing the marginal product of labor.
   C) the slope of the curve showing the total product of labor.
   D) total product divided by the total quantity of labor employed.

**Answer:** D

**Topic: Average Product of Labor**
**Skill: Recognition**

13) Average product is the
   A) total product per unit of an input.
   B) maximum output attainable with fixed factors and one variable factor.
   C) change in total product due to a one unit change in input.
   D) total product divided by the total cost.

**Answer:** A

---

**Total Product, Marginal Product, Average Product**

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<th>Labor (workers per day)</th>
<th>Total product (units per day)</th>
<th>Marginal product</th>
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**Topic: Total Product**
**Skill: Conceptual**

14) In the above table, the total product that is produced when the firm employs four workers is
   A) 3.
   B) 3.75.
   C) 8.
   D) 15.

**Answer:** D
15) In the above table, the marginal product of the third worker is
A) 1.
B) 2.
C) 3.
D) 4.
Answer: D

16) In the above table, the marginal product of the fourth worker is
A) 1.
B) 3.
C) 4.
D) 6.
Answer: B

17) In the above table, the marginal product is greatest when the
A) first worker is hired.
B) second worker is hired.
C) third worker is hired.
D) fourth worker is hired.
Answer: B

18) In the above table, the average product of three workers is
A) 1.
B) 2.
C) 3.
D) 4.
Answer: D

20) Points below a firm’s total product curve are
A) both attainable and technologically efficient.
B) neither attainable nor technologically efficient.
C) attainable but not technologically efficient.
D) technologically efficient but not attainable.
Answer: C

21) Points on a firm’s total product curve are
A) both attainable and technologically efficient.
B) neither attainable nor technologically efficient.
C) attainable but not technologically efficient.
D) technologically efficient but not attainable.
Answer: A

22) When the total product curve is drawn in a figure that measures employment along the horizontal axis, it is a graph that shows the
A) minimum cost of producing a given amount of output using different techniques.
B) maximum profit attainable for each unit of output sold per unit of labor employed.
C) maximum output attainable for each quantity of labor employed.
D) minimum output attainable for each quantity of labor employed.
Answer: C
23) In the figure above, the marginal product of the second worker is
A) 10 units.
B) 5 units.
C) 2 units.
D) 1 units.

Answer: B

24) In the above figure, after the second worker is hired, the marginal product of labor is
A) increasing.
B) diminishing.
C) constant.
D) zero.

Answer: B

25) In the above figure, the average product of labor equals
A) 15.
B) 4.
C) 3.75.
D) approximately 1.

Answer: C

26) In the above figure, the average product of labor at point e is
A) 10.
B) 5.
C) 2.
D) None of the above answers is correct.

Answer: B

27) In the figure above, an inefficient point is
A) a.
B) e.
C) g.
D) f.

Answer: D

28) In the above figure, an unattainable point is
A) a.
B) e.
C) g.
D) f.

Answer: C

29) In the above figure, the most efficient way to produce 10 units is to hire
A) 1 worker.
B) 2 workers.
C) 3 workers.
D) 5 workers.

Answer: B
31) In the above figure, the most efficient way to produce 15 units is to hire
A) 2 workers.
B) 3 workers.
C) 4 workers.
D) 5 workers.
Answer: C

32) In the above figure, the maximum number of units that 4 workers can produce is
A) 5 units.
B) 10 units.
C) 15 units.
D) more than 15 units.
Answer: C

33) In the above figure, the marginal product of labor is zero at point
A) a.
B) c.
C) e.
D) f.
Answer: C

34) At point e in the above figure, the marginal product of labor definitely
A) is less than the average product of labor.
B) equals the average product of labor.
C) is greater than the average product of labor.
D) is at its maximum.
Answer: A

35) The steeper the slope of the total product curve, the
A) larger is the marginal product of labor.
B) smaller is the marginal product of labor.
C) higher is the level of the total cost curve.
D) more efficient is the technology employed.
Answer: A

36) Increasing marginal returns to labor might occur at low levels of labor input because of
A) increasing average costs.
B) differing factor proportions.
C) increasing specialization of tasks.
D) decreasing use of machinery and increasing use of technology.
Answer: C

37) In general, increasing marginal returns occur
A) as output expands at low levels of production.
B) through the entire range of production.
C) as output expands at high levels of production.
D) whenever the slope of the total product curve is positive.
Answer: A

38) “Diminishing marginal returns” refer to a situation in which the
A) marginal cost of the last worker hired is less than the marginal cost of the previous worker hired.
B) average cost of the last worker hired is less than the average cost of the previous worker hired.
C) marginal product of the last worker hired is less than the marginal product of the previous worker hired.
D) average product of the last worker hired is less than the average product of the previous worker hired.
Answer: C

39) The law of diminishing returns implies that, with the use of capital fixed, as the use of labor rises,
A) total product will fall eventually.
B) the marginal product of labor will fall eventually.
C) the total product of labor will fall below the marginal product of labor.
D) the production process will become technologically inefficient eventually.
Answer: B
40) The law of diminishing returns states that as
A) the size of a plant increases, the firm's fixed cost decreases.
B) the size of a plant increases, the firm's fixed cost increases.
C) a firm uses more of a variable input, given the quantity of fixed inputs, the marginal product of the variable input eventually diminishes.
D) a firm uses more of a variable input, given the quantity of fixed inputs, the firm's average total cost will decrease eventually.
Answer: C

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</table>

41) In the above table, between what two levels of output does one first observe the law of diminishing returns?
A) 0 and 1000
B) 1000 and 3000
C) 3000 and 4000
D) 4000 and 4500
Answer: C

42) The table above shows the short-run product schedule for Virginia’s Tee-Shirts. What is the marginal product associated with the hiring the fifth worker?
A) 30 shirts.
B) 50 shirts.
C) 235 shirts.
D) 250 shirts.
Answer: A

43) The table above shows the short-run product schedule for Virginia’s Tee-Shirts. What is the average product associated with hiring the fourth worker?
A) 40 shirts.
B) 55 shirts.
C) 50 shirts.
D) 220 shirts.
Answer: B

44) The table above shows the short-run product schedule for Virginia’s Tee-Shirts. The worker for whom the law of diminishing returns initially occurs is the ____ worker.
A) 5th
B) 4th
C) 3rd
D) 2nd
Answer: C
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<th>Labor (workers)</th>
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<td>90</td>
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</table>

**Topic: Marginal Product of Labor**

**Skill: Analytical**

45) The above table shows the short-run total product schedule for the campus book store. What is the marginal product ($MP$) of the 6th employee at the book store?

A) 83 books sold.
B) 13.83 books sold.
C) 10 books sold.
D) between 11 and 14 books sold.

**Answer: C**

46) The above table shows the short-run total product schedule for the campus book store. Which employee has the highest marginal product ($MP$)?

A) The 10th employee.
B) The 5th employee.
C) The 4th employee.
D) The 1st employee.

**Answer: C**

47) The above table shows the short-run total product schedule for the campus book store. What is the average product ($AP$) of the 4th employee?

A) 58 books sold.
B) 14.5 books sold.
C) 18 books sold.
D) 13.3 books sold.

**Answer: B**

**Topic: Marginal Product and Average Product of Labor**

**Skill: Analytical**

48) The above table shows the short-run total product schedule for the campus book store. When the fifth employee is hired, the

A) marginal product is increasing and is greater than average product.
B) marginal product is increasing and is less than average product.
C) marginal product is decreasing and is greater than average product.
D) marginal product is decreasing and is less than average product.

**Answer: C**

49) The above table shows the short-run total product schedule for the campus book store. At what levels of books sold per hour will the marginal product of labor be greater than the average product of labor?

A) 40 books sold per hour.
B) 73 books sold per hour.
C) Both A and B are correct.
D) Neither A nor B is correct.

**Answer: C**

**Topic: Law of Diminishing Returns**

**Skill: Analytical**

50) The above table shows the short-run total product schedule for the campus book store. When the book store hires the 3rd employee,

A) they are still experiencing increasing marginal returns.
B) they have already begun to experience diminishing marginal returns, but average productivity is still rising.
C) both marginal and average productivity have already begun to decline.
D) marginal productivity is at its maximum.

**Answer: A**
### Topic: Law of Diminishing Returns
#### Skill: Analytical
51) The above table shows the short-run total product schedule for the campus book store. With which employee do diminishing marginal returns set in?

A) The 9th employee.
B) The 6th employee.
C) The 5th employee.
D) The 2nd employee.

**Answer:** C

<table>
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<tr>
<th>Labor (workers)</th>
<th>Total product (units per hour)</th>
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<td>75</td>
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</table>

### Topic: Total Product
#### Skill: Analytical
52) In the above table, the marginal product of the 7th worker is 6. What is the total product when 7 workers are employed?

A) 68
B) 70
C) 72
D) 76

**Answer:** B

### Topic: Marginal Product of Labor
#### Skill: Analytical
54) In the above table, what is marginal product of labor for the 5th worker?

A) 10
B) 14
C) 9
D) 11.2

**Answer:** A

### Topic: Average Product of Labor
#### Skill: Analytical
55) In the above table, what is average product when 4 workers are employed?

A) 12
B) 10
C) 11.5
D) 9.5

**Answer:** C

### Topic: Law of Diminishing Returns
#### Skill: Analytical
56) In the above table, diminishing marginal returns start to occur when the

A) 3rd worker is employed.
B) 4th worker is employed.
C) 5th is employed.
D) 6th is employed.

**Answer:** B

### Topic: Relationship Between Average Product and Marginal Product Curves
#### Skill: Conceptual
57) When the marginal product equals the average product, the

A) average product curve is downward sloping.
B) average product curve is upward sloping.
C) marginal product is at its maximum.
D) average product is at its maximum.

**Answer:** D
Topic: Relationship Between Average Product and Marginal Product Curves
Skill: Conceptual
58) Which of the following statements is true for any marginal and average?
   A) When the marginal is greater than the average, the average rises.
   B) When the marginal is less than the average, the average rises.
   C) When the marginal is rising, the average is rising.
   D) When the marginal is equal to the average, the average falls.
Answer: A

Topic: Relationship Between Average Product and Marginal Product Curves
Skill: Conceptual
59) Which of the following statements is true?
   A) The marginal and average product curves intersect at the maximum level of output.
   B) At every output level the marginal product curve lies above the average product curve.
   C) The marginal product and average product curves intersect when average product is at its maximum.
   D) The marginal product curve always has a positive slope.
Answer: C

Topic: Relationship Between Average Product and Marginal Product Curves
Skill: Recognition
60) The marginal product and average product curves
   A) never intersect.
   B) intersect at the maximum point of the marginal product curve.
   C) intersect at the maximum point of the average product curve.
   D) do not intersect at any predictable point.
Answer: C

Topic: Relationship Between Average Product and Marginal Product Curves
Skill: Analytical
61) When the marginal product curve is downward sloping, the
   A) average product curve must also be downward sloping.
   B) average product curve may be either upward or downward sloping.
   C) average product curve must be upward sloping.
   D) average product curve must be horizontal.
Answer: B

Topic: Relationship Between the Average Product and the Marginal Product
Skill: Analytical
62) If a firm’s marginal product of labor is less than its average product of labor, then an increase in the quantity of labor it employs definitely will
   A) decrease its total product.
   B) decrease its average product of labor.
   C) increase its marginal product of labor.
   D) not change its average product of labor.
Answer: B

Topic: Technology
Skill: Recognition
63) A technological change that increases productivity shifts the total product curve upward
   A) and also shifts the average product curve upward, but leaves the marginal product curve unchanged.
   B) but leaves the marginal product curve unchanged.
   C) and also shifts the marginal product curve upward, but leaves the average product curve unchanged.
   D) as well as the average product curve and the marginal product curves upward.
Answer: D

Short-Run Cost

Topic: Total Costs
Skill: Recognition
64) Total cost is the sum of fixed costs and
   A) accounting costs.
   B) explicit costs.
   C) implicit costs.
   D) variable costs.
Answer: D
CHAPTER 10

Topic: Total Fixed Costs
Skill: Analytical
65) A firm has fixed costs
A) in the short run and in the long run.
B) in the short run but not in the long run.
C) in the long run but not in the short run.
D) neither in the long run nor in the short run.
Answer: B

Topic: Total Fixed Costs
Skill: Recognition
66) Total fixed cost is the sum of all
A) costs of the firm’s fixed inputs.
B) costs associated with the production of goods.
C) costs that rise as output increases.
D) explicit costs.
Answer: A

Topic: Total Variable Costs
Skill: Recognition
67) Total variable cost is the sum of all
A) costs of the firm’s fixed inputs.
B) costs associated with the production of goods.
C) costs that rise as output increases.
D) implicit costs.
Answer: C

Topic: Marginal Cost
Skill: Recognition
68) A firm’s marginal cost is the increase in its total
A) quantity of labor.
B) average cost.
C) output.
D) average revenue.
Answer: C

Topic: Marginal Cost
Skill: Recognition
69) Marginal cost is
A) all the costs of the fixed inputs.
B) all the costs of production of goods.
C) all the costs that vary with output.
D) the change in the total cost resulting from a one-unit change in output.
Answer: D

Topic: Marginal Cost
Skill: Recognition
70) Marginal cost is calculated as
A) total cost divided by output.
B) the increase in total cost divided by the increase in output.
C) the increase in total cost divided by the increase in labor, given the amount of capital.
D) total cost minus total fixed cost.
Answer: B

Topic: Marginal Cost
Skill: Conceptual
71) A company could produce 99 units of a good for $316 or produce 100 units of the same good for $320. The marginal cost of the 100th unit
A) is $3.20.
B) is $4.00
C) is $320.
D) cannot be calculated with this information.
Answer: B

Topic: Marginal Cost
Skill: Conceptual
72) A company could produce 100 units of a good for $320 or produce 101 units of the same good for $324. The $4 difference in costs is
A) the marginal benefit of producing the 101st unit.
B) the marginal cost of producing the 101st unit.
C) both the marginal benefit and the marginal cost of producing the 101st unit.
D) neither the marginal benefit nor the marginal cost of producing the 101st unit.
Answer: B

Topic: Marginal Cost
Skill: Conceptual
73) As output increases, marginal cost will eventually
A) increase because of the law of increasing returns.
B) increase because of the law of diminishing returns.
C) decrease because of the law of diminishing returns.
D) decrease because of the law of increasing returns.
Answer: B
Topic: Average Fixed Costs  
Skill: Conceptual  
74) By using more labor to produce more output, a firm can always reduce its 
A) average cost of labor.  
B) marginal fixed cost of labor.  
C) marginal fixed cost of output.  
D) average fixed cost.  
Answer: D

Topic: Average Fixed Costs  
Skill: Conceptual  
75) By using more labor to produce more output, a firm can always reduce its 
A) marginal cost.  
B) average variable cost.  
C) average total cost.  
D) average fixed cost.  
Answer: D

Topic: Average Total Costs  
Skill: Recognition  
76) Average total costs are total costs divided by 
A) total output.  
B) total fixed costs.  
C) total variable costs.  
D) the total number of workers employed. 
Answer: A

Topic: Average Total Costs  
Skill: Recognition  
77) Average total costs are 
A) total costs divided by total output.  
B) total output divided by total costs.  
C) the change in total costs divided by the change in output.  
D) the change in output divided by the change in total costs. 
Answer: A

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<th>Total variable cost (dollars)</th>
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Topic: Total Costs  
Skill: Conceptual  
78) In the above table, the total cost of producing 9 units of output is 
A) $20.  
B) $30.  
C) $50.  
D) $70.  
Answer: D

Topic: Total Fixed Costs  
Skill: Conceptual  
79) The above table shows a firm’s 
A) long-run costs.  
B) short-run costs.  
C) short-run and long-run costs.  
D) More information is needed to determine if the costs are long-run costs or short-run costs.  
Answer: B

Topic: Total Variable Costs  
Skill: Conceptual  
80) In the above table, the total variable cost of producing 16 units of output is 
A) $20.  
B) $60.  
C) $100.  
D) $120.  
Answer: C

Topic: Marginal Cost  
Skill: Analytical  
81) Using the data in the above table, when output increases from 4 to 9 units, the marginal cost of one of those 5 units is 
A) $4.00.  
B) $4.25.  
C) $5.00.  
D) $6.25.  
Answer: C
82) Using the data in the above table, the average fixed cost of producing 9 units per day is
A) $2.22.
B) $5.00.
C) $5.55.
D) $20.00.
Answer: A

83) Using the data in the above table, the average total cost of producing 16 units per day is
A) $1.25.
B) $6.25.
C) $7.00.
D) $7.50.
Answer: D

84) The above table gives some of the costs of the Delicious Pie Company. What is the total fixed cost of producing 100 pies?
A) $300
B) $400
C) $700
D) More information is needed to calculate the total fixed cost.
Answer: A

85) The above table gives some of the costs of the Delicious Pie Company. The marginal cost of increasing pie output from 200 to 300 pies equals ____ per pie.
A) $1.800
B) $1,000
C) $8
D) $6
Answer: C

86) The above table gives some of the costs of the Delicious Pie Company. What is the average variable cost of producing 300 pies?
A) $1,800
B) $6
C) $5
D) More information is needed to calculate the average variable cost.
Answer: C

87) The above table gives some of the costs of the Delicious Pie Company. What is the average total cost of producing 200 pies?
A) $1300
B) $650
C) $6.50
D) $5.00
Answer: C
<table>
<thead>
<tr>
<th>Output (units)</th>
<th>Total cost (dollars)</th>
<th>Average variable cost (dollars)</th>
<th>Marginal cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
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<td>80</td>
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<tr>
<td>9</td>
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<td></td>
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<tr>
<td>14</td>
<td>290</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>380</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Topic: Total Cost**  
**Skill: Analytical**

88) The above (incomplete) table provides information about the relationships between output and various cost measures. The total fixed cost ($TFC$) for the firm is

A) Zero.  
B) $45.  
C) $10.  
D) None of the above answers is correct.

**Answer: C**

89) The above (incomplete) table provides information about the relationships between output and various cost measures. The total cost ($TC$) of producing 9 units of output is

A) $180.  
B) $190.  
C) $20.  
D) None of the above answers is correct.

**Answer: B**

90) The above (incomplete) table provides information about the relationships between output and various cost measures. The marginal cost per unit when increasing output from 14 to 17 units is

A) $20.  
B) $30.  
C) $380.  
D) None of the above answers is correct.

**Answer: B**

<table>
<thead>
<tr>
<th>Output (tents)</th>
<th>Total fixed cost (dollars)</th>
<th>Total variable cost (dollars)</th>
<th>Total cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>50</td>
<td>0</td>
<td>50</td>
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<tr>
<td>1</td>
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<td>25</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
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<tr>
<td>3</td>
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<td>120</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>115</td>
<td>165</td>
</tr>
</tbody>
</table>

**Topic: Marginal Cost**  
**Skill: Analytical**

91) The above table shows some cost data for Tracey’s Tents. What is the marginal cost of the 3rd tent?

A) $25.  
B) $20.  
C) $70.  
D) $120.  

**Answer: A**

92) The above table shows some cost data for Tracey’s Tents. What is the average total cost when output is 3?

A) $120.  
B) $30.  
C) $40.  
D) $50.  

**Answer: C**

93) The above table shows some cost data for Tracey’s Tents. What is the average fixed cost when 4 tents are produced?

A) $50.00.  
B) $12.50.  
C) $25.00.  
D) $37.50.  

**Answer: B**
<table>
<thead>
<tr>
<th>Quantity (barrels of pickles)</th>
<th>Total variable cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>4</td>
<td>75</td>
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<tr>
<td>5</td>
<td>110</td>
</tr>
<tr>
<td>6</td>
<td>160</td>
</tr>
</tbody>
</table>

**Topic: Total Cost**  
**Skill: Analytical**

94) The above table gives some cost data for Peter’s Pickles. Peter’s fixed cost is $20. His total cost of producing 6 barrels of pickles is  
A) $160.  
B) $180.  
C) $450.  
D) There is not enough information to answer the question.  
**Answer: B**

**Topic: Marginal Cost**  
**Skill: Analytical**

95) The above table gives some cost data for Peter’s Pickles. Peter’s fixed cost is $20. The marginal cost of increasing output from 3 to 4 barrels of pickles is  
A) $25.  
B) $75.  
C) $20.  
D) $50.  
**Answer: A**

**Topic: Average Total Cost**  
**Skill: Analytical**

96) The above table gives some cost data for Peter’s Pickles. Peter’s fixed cost is $20. The average total cost (ATC) when 5 barrels of pickles are produced is  
A) $22.  
B) $26.  
C) $35.  
D) There is not enough information to answer the question.  
**Answer: B**

**Topic: Average Variable Cost**  
**Skill: Analytical**

97) The above table gives some cost data for Peter’s Pickles. Peter’s fixed cost is $20. Average variable cost (AVC) is lowest when output is equal to  
A) 1 barrel of pickles.  
B) 2 barrels of pickles.  
C) 3 barrels of pickles.  
D) 4 barrels of pickles.  
**Answer: C**

<table>
<thead>
<tr>
<th>Labor (workers)</th>
<th>Output (units per day)</th>
<th>Total variable cost (dollars)</th>
<th>Total cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
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</tr>
<tr>
<td>5</td>
<td>15</td>
<td>100</td>
<td>130</td>
</tr>
</tbody>
</table>

**Topic: Fixed Costs**  
**Skill: Conceptual**

98) In the above table, the total fixed cost is  
A) $0.  
B) $20.  
C) $30.  
D) $50.  
**Answer: C**

99) In the above table, the total fixed cost at 3 units of output is  
A) $0.  
B) $30.  
C) $60.  
D) $90.  
**Answer: B**

**Topic: Marginal Cost**  
**Skill: Analytical**

100) In the above table, when output increases from 8 to 12 units, the marginal cost of one of those 4 units is  
A) $1.20.  
B) $2.00.  
C) $5.00.  
D) $15.00.  
**Answer: C**
Topic: Average Fixed Cost
Skill: Analytical
101) In the above table, the average fixed cost of producing 15 units of output is
   A) $0.50.
   B) $2.00.
   C) $6.66.
   D) $8.66.
Answer: B

Topic: Average Variable Cost
Skill: Analytical
102) In the above table, the average variable cost of producing 14 units of output is
   A) $0.175.
   B) $5.71.
   C) $7.86.
   D) $10.00.
Answer: B

Topic: Average Total Cost
Skill: Analytical
103) In the above table, the average total cost of producing 14 units of output is
   A) $5.71.
   B) $6.75.
   C) $7.00.
   D) $7.86.
Answer: D

Topic: Costs
Skill: Analytical
104) A firm’s average total cost is $100, its average variable cost is $90, and its total fixed cost is $1,000. Its output is
   A) less than 70 units.
   B) between 70 and 120 units.
   C) between 120 and 170 units.
   D) more than 170 units.
Answer: B

Topic: Costs
Skill: Analytical
105) A firm’s average total cost is $80, its average variable cost is $75, and its output is 50 units. Its total fixed cost is
   A) less than $100.
   B) between $100 and $200.
   C) between $200 and $300.
   D) more than $300.
Answer: C

Topic: Costs
Skill: Analytical
106) A firm’s average variable cost is $60, its total fixed cost is $3,000, and its output is 600 units. Its average total cost is
   A) less than $58.
   B) between $58 and $62.
   C) between $62 and $64.
   D) more than $64.
Answer: D

Topic: Costs
Skill: Analytical
107) A firm’s average variable cost is $90, its total fixed cost is $10,000, and its output is 1,000 units. Its total cost is
   A) less than $85,000.
   B) between $85,000 and $95,000.
   C) between $95,000 and $105,000.
   D) more than $105,000.
Answer: C

Topic: Costs
Skill: Analytical
108) A firm’s average total cost is $80, its fixed cost is $1,000, and its output is 100 units. Its average variable cost
   A) is less than $40.
   B) is between $40 and $60.
   C) is more than $60.
   D) cannot be determined without more information.
Answer: C

Topic: Costs
Skill: Analytical
109) A firm’s marginal cost is $30, its average total cost is $50, and its output is 800 units. Its total cost of producing 801 units is
   A) less than $40,000.
   B) between $40,000 and $40,050.
   C) between $40,050 and $40,080.
   D) greater than $40,080.
Answer: B
110) A firm’s marginal cost is $82, its average total cost is $50, and its output is 800 units. Its total cost of producing 801 units is
A) less than $40,000.
B) between $40,000 and $40,050.
C) between $40,050 and $40,080.
D) greater than $40,080.
Answer: D

111) A firm’s output is 80 units, its marginal cost is $42, its average variable cost is also $42, and its average fixed cost is $10. The slope of its average fixed cost curve is
A) negative.
B) positive but the precise slope cannot be calculated.
C) positive and the slope is between 0 and 1.50.
D) not able to be calculated without more information.
Answer: A

112) The vertical distance between a firm’s total cost (TC) and its total variable cost (TVC) curves
A) decreases as output decreases.
B) is equal to the average variable cost, AVC.
C) is equal to the total fixed cost, TFC.
D) is equal to the marginal cost, MC.
Answer: C

113) In the above figure, the total fixed cost curve is curve
A) A.
B) B.
C) C.
D) none of the curves in the figure.
Answer: C

114) In the above figure, the total variable cost curve is curve
A) A.
B) B.
C) C.
D) none of the curves in the figure.
Answer: B

115) In the above figure, the total cost curve is curve
A) A.
B) B.
C) C.
D) none of the curves in the figure.
Answer: A
116) In the above figure, the relationship between costs indicates that the distance between curves
A) $A$ and $B$ is equal to the fixed cost.
B) $A$ and $B$ is equal to the variable cost.
C) $B$ and $C$ is equal to the fixed cost.
D) $B$ and $C$ is equal to the average total cost.
Answer: A

117) As output increases, the slope of the curve showing the firm’s average fixed cost is
A) first negative then positive.
B) first positive then negative.
C) always negative.
D) always positive.
Answer: C

118) The vertical distance between a firm’s average total cost curve, $ATC$, and its average variable cost curve, $AVC$,
A) decreases as output increases.
B) is equal to its marginal cost, $MC$.
C) is equal to its total fixed cost, $TFC$.
D) is equal to its average product.
Answer: A

119) The marginal cost ($MC$) curve intersects the
A) $ATC$, $AVC$, and $AFC$ curves at their minimum points.
B) $ATC$ and $AFC$ curves at their minimum points.
C) $AVC$ and $AFC$ curves at their minimum points.
D) $ATC$ and $AVC$ curves at their minimum points.
Answer: D

120) In the above figure, the marginal cost curve is
A) $A$.
B) $B$.
C) $C$.
D) $D$.
Answer: A

121) In the above figure, the average fixed cost curve is
A) $A$.
B) $B$.
C) $C$.
D) $D$.
Answer: D

122) In the above figure, the average variable cost curve is
A) $A$.
B) $B$.
C) $C$.
D) $D$.
Answer: C
123) In the above figure, the average total cost curve is curve
A) A.
B) B.
C) C.
D) D.
Answer: B

124) In the above figure, as output increases, the distance between curves B and C decreases because
A) total cost decreases as output increases.
B) average fixed cost decreases as output increases.
C) there are diminishing returns to average total cost.
D) there are increasing marginal costs as output increases.
Answer: B

125) In the above figure, curve D slopes downward because
A) average fixed costs decrease as output increases.
B) all costs decrease as output increases.
C) there are diminishing returns.
D) there are decreasing marginal costs.
Answer: A

126) In the above figure, the intersection of curves A and C is the point at which
A) average total cost is minimized.
B) average variable cost is minimized.
C) average fixed cost is minimized.
D) total product is maximized.
Answer: B

127) In the above figure, the intersection of curves A and B is the point at which
A) average total cost is minimized.
B) average variable cost is minimized.
C) average fixed cost is minimized.
D) total product is maximized.
Answer: A

128) Average variable cost is at a minimum at the same amount of output at which
A) average product is at a maximum.
B) marginal product is at a maximum.
C) average product is at a minimum.
D) marginal product is at a minimum.
Answer: A

129) The range of output over which a firm’s average variable cost is decreasing is the same as the range over which its
A) marginal cost is increasing.
B) average fixed cost is decreasing.
C) average product is increasing.
D) average product is decreasing.
Answer: C

130) A change in technology that shifts the firm’s total product curve upward without changing the quantity of capital used
A) shifts the average total cost curve upward.
B) shifts the average total cost curve downward.
C) does not change the cost curves.
D) shifts the marginal cost curve upward.
Answer: B
**Long-Run Cost**

**Topic: Short Run Versus Long Run**
**Skill: Conceptual**

131) Which of the following is FALSE?
A) Long-run average variable costs equal long-run average total costs.
B) Fixed costs increase in the long run.
C) As a firm produces more output, eventually it experiences diseconomies of scale.
D) In the long run, both the amount of capital and labor used by the firm can be changed.

**Answer: B**

**Topic: Long-Run Average Cost Curve**
**Skill: Conceptual**

134) The average total cost curves for plants A, B, C, and D are shown in the above figure. Which plant is best to use to produce 80 units per day?
A) Plant A.
B) Plant B.
C) Plant C.
D) Plant D.

**Answer: C**

135) The average total cost curves for plants A, B, C, and D are shown in the above figure. The plant size that is the most economically efficient?
A) is plant A.
B) is plant B.
C) is plant C.
D) depends on the desired level of output.

**Answer: D**

**Topic: Long-Run Average Cost Curve**
**Skill: Conceptual**

136) The average total cost curves for plants A, B, C, and D are shown in the above figure. It is possible that the long-run average cost curve runs through points
A) a, b, and c.
B) b, d, and e.
C) d, e, and f.
D) c and d.

**Answer: C**

**Topic: Long-Run Average Cost Curve**
**Skill: Analytical**

137) A firm is operating in its range of economies of scale and is on both its LRAC curve and its short-run ATC curve. At that level of output, the slope of its LRAC curve is
A) zero and the slope of its ATC curve is zero.
B) zero and the slope of its ATC curve is negative.
C) negative and the slope of its ATC curve is zero.
D) negative and the slope of its ATC curve is negative.

**Answer: D**
Chapter 10

Topic: Long-Run Average Cost Curve
Skill: Analytical
138) When economies of scale are present, the LRAC curve touches each short-run ATC curve
A) to the left of the ATC curve’s minimum point.
B) to the right of the ATC curve’s minimum point.
C) at the ATC curve’s minimum point.
D) at no points.
Answer: A

Topic: Economies of Scale
Skill: Recognition
139) Economies to scale refer to
A) the point at which marginal cost equals average cost.
B) the fact that in the long run, fixed costs remain constant as output increases.
C) the range of output over which the long-run average cost falls as output increases.
D) a feature of short-run production functions but not long-run production functions.
Answer: C

Topic: Economies of Scale
Skill: Conceptual
140) In the short run
A) all inputs are variable.
B) all firms experience increasing returns to scale.
C) some firms experience economies of scale.
D) no firm experiences economies of scale.
Answer: D

Topic: Economies of Scale
Skill: Recognition
141) When long-run average costs decrease as output increases, there are
A) economies of scale.
B) diseconomies of scale.
C) constant returns to scale.
D) constant marginal costs.
Answer: A

Topic: Diseconomies of Scale
Skill: Recognition
143) When long-run average costs increase as output increases, there are
A) economies of scale.
B) diseconomies of scale.
C) constant returns to scale.
D) constant marginal costs.
Answer: B

Topic: Diseconomies of Scale
Skill: Analytical
144) “Diseconomies of scale” occur in
A) the long run, but not the short run.
B) the short run, but not the long run.
C) both the short run and the long run.
D) neither the short run nor the long run.
Answer: A
Topic: Economies of Scale
Skill: Analytical
146) In the above figure, between 5 and 10 units per hour, the firm experiences
A) economies of scale.
B) diseconomies of scale.
C) constant returns to scale.
D) decreasing total fixed costs.
Answer: A

Topic: Constant Returns To Scale
Skill: Analytical
147) In the above figure, the long-run average cost curve exhibits constant returns to scale
A) between 5 and 10 units per hour.
B) between 10 and 20 units per hour.
C) between 20 and 25 units per hour.
D) along the entire curve.
Answer: B

Topic: Diseconomies of Scale
Skill: Analytical
148) In the above figure, the long-run average cost curve exhibits diseconomies of scale
A) between 5 and 10 units per hour.
B) between 10 and 20 units per hour.
C) between 20 and 25 units per hour.
D) along the entire curve.
Answer: C

Topic: Diseconomies of Scale
Skill: Analytical
149) In the above figure, between 20 and 25 units per hour, the firm experiences
A) economies of scale.
B) diseconomies of scale.
C) constant returns to scale.
D) increasing total fixed costs.
Answer: B

Topic: Economies and Diseconomies of Scale
Skill: Recognition
150) In the above figure, economies of scale are present up to an output level of
A) 5,000 pounds of coffee.
B) 10,000 pounds of coffee.
C) 13,000 pounds of coffee.
D) 15,000 pounds of coffee.
Answer: B

Topic: Minimum Efficient Scale
Skill: Recognition
151) In the above figure, the minimum efficient scale of output is
A) 5,000 pounds of coffee.
B) 10,000 pounds of coffee.
C) 13,000 pounds of coffee.
D) 15,000 pounds of coffee.
Answer: B

Study Guide Questions

Topic: Study Guide Question, Short Run
Skill: Conceptual
152) In the short run,
A) the size of the plant is fixed.
B) all inputs are variable.
C) all inputs are fixed.
D) some firms experience increasing returns to scale.
Answer: A
**Topic: Study Guide Question, Long Run**
**Skill: Recognition**
153) The long run is a time period in which
A) one year or less elapses.
B) all inputs are variable.
C) all inputs are fixed.
D) there is at least one fixed input and at least one variable input.

**Answer: B**

**Topic: Study Guide Question, Average Product**
**Skill: Recognition**
154) Total product divided by the total quantity of labor employed equals the
A) average product of labor.
B) marginal product of labor.
C) average total cost.
D) average variable cost.

**Answer: B**

**Topic: Study Guide Question, Diminishing Marginal Returns**
**Skill: Conceptual**
155) Diminishing marginal returns occurs when
A) all inputs are increased and output decreases.
B) all inputs are increased and output increases by a smaller proportion.
C) a variable input is increased and output decreases.
D) a variable unit is increased and its marginal product falls.

**Answer: D**

**Topic: Study Guide Question, Marginal Product and Average Product of Labor**
**Skill: Analytical**
156) The average product of labor exceeds the marginal product of labor
A) when the average product of labor is falling.
B) when the average product of labor is rising.
C) when the marginal product of labor is at its maximum.
D) when the average product of labor is at its maximum.

**Answer: A**

**Topic: Study Guide Question, Marginal Product and Average Product of Labor**
**Skill: Analytical**
157) When the marginal product of labor exceeds the average product of labor,
A) the average product of labor is increasing.
B) the average product of labor is decreasing.
C) the total product curve is negatively sloped.
D) the firm is experiencing decreasing returns to scale.

**Answer: A**

**Topic: Study Guide Question, Total Cost**
**Skill: Analytical**
158) Which cost always increases as output increases?
A) Total cost.
B) Marginal cost.
C) Average total cost.
D) Average fixed cost.

**Answer: A**

**Topic: Study Guide Question, Total Fixed Costs**
**Skill: Analytical**
159) Pat’s Catering finds that when it caters 20 meals a week, its total cost is $6,000. If Pat has total variable cost of $5,000, what is Pat’s total fixed cost?
A) $50.
B) $250.
C) $1,000.
D) $6,000.

**Answer: C**

**Topic: Study Guide Question, Marginal Cost**
**Skill: Recognition**
160) The change in total cost from producing another unit of output equals the
A) average total cost.
B) variable cost.
C) average variable cost.
D) marginal cost.

**Answer: D**
A farmer discovers that the total cost of growing 50 acres of eggplant is $50,000 and that the total cost of growing 51 acres of eggplant is $52,000. The marginal cost of the 51st acre of eggplant is

A) $52,000.
B) $50,000.
C) $2,000.
D) $1,000.

Answer: C

Which curve intersects the $AVC$ curve at its minimum point?

A) The $MC$ curve.
B) The $ATC$ curve.
C) The $AFC$ curve.
D) The $MP$ curve.

Answer: A

If the $ATC$ curve has a positive slope, then the $MC$ curve must be

A) horizontal.
B) vertical.
C) above the $ATC$ curve.
D) below the $ATC$ curve.

Answer: C

161) A farmer discovers that the total cost of growing 50 acres of eggplant is $50,000 and that the total cost of growing 51 acres of eggplant is $52,000. The marginal cost of the 51st acre of eggplant is

A) $52,000.
B) $50,000.
C) $2,000.
D) $1,000.

Answer: C

Which curve intersects the $AVC$ curve at its minimum point?

A) The $MC$ curve.
B) The $ATC$ curve.
C) The $AFC$ curve.
D) The $MP$ curve.

Answer: A

If the $ATC$ curve has a positive slope, then the $MC$ curve must be

A) horizontal.
B) vertical.
C) above the $ATC$ curve.
D) below the $ATC$ curve.

Answer: C

The $LRAC$ curve generally is

A) shaped as an upside-down U.
B) U-shaped.
C) upward sloping.
D) downward sloping.

Answer: B

166) The $LRAC$ curve generally is

A) shaped as an upside-down U.
B) U-shaped.
C) upward sloping.
D) downward sloping.

Answer: B

168) When a firm is experiencing economies of scale, the $ATC$ decreases as output increases. This decrease shifts the $ATC$ curve downward. The correct answer is:

A) total fixed cost curve downward.
B) marginal product of labor curve downward.
C) average variable cost curve downward.
D) marginal product of labor curve upward.

Answer: C
CHAPTER 10

**Topic: Study Guide Question, Constant Returns to Scale**
**Skill: Recognition**
169) Constant returns to scale means that as all inputs are increased,

A) total output remains constant.
B) average total cost rises.
C) average total cost rises at the same rate as do the inputs.
D) total output increases in the same proportion as do the inputs.
**Answer: D**

**Topic: Study Guide Question, Diseconomies of Scale**
**Skill: Recognition**
170) When a firm is experiencing diseconomies of scale,

A) the MP curve has a negative slope.
B) the LRAC curve has a positive slope.
C) it must also experience diminishing returns to labor.
D) the MC curve has a negative slope.
**Answer: B**

**MyEconLab Questions**

<table>
<thead>
<tr>
<th>Labor (workers)</th>
<th>Total product (units per day)</th>
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**Topic: Parallel MyEconLab, Average and Marginal Product**
**Skill: Analytical**
172) Using the data in the above table, if the firm employs 5 workers, total product (measured in units per day) and average product and marginal product of the fifth worker (measured in units per worker) are

A) 23, 5.00, and 4 respectively.
B) 23, 5.75, and 4 respectively.
C) 25, 5.00, and 2 respectively.
D) 25, 5.75, and 4 respectively.
**Answer: C**

<table>
<thead>
<tr>
<th>Labor (workers)</th>
<th>Output (units)</th>
<th>Total fixed cost, TFC (dollars)</th>
<th>Total variable cost, TVC (dollars)</th>
<th>Total cost, TC (dollars)</th>
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</table>

**Topic: Parallel MyEconLab, Average Fixed Cost**
**Skill: Analytical**
173) Using the data in the above table, the average fixed cost of producing 16 units is

A) $1.11 a unit.
B) $1.25 a unit.
C) $1.54 a unit.
D) $2.22 a unit.
**Answer: B**

**Topic: Parallel MyEconLab, Marginal Cost**
**Skill: Analytical**
174) Using the data in the above table, when the firm increases its output from 4 to 9 units, the marginal cost of a unit is

A) $4.00 a unit.
B) $5.00 a unit.
C) $6.00 a unit.
D) $7.00 a unit.
**Answer: B**

171) Using the data in the above table, if the firm employs 3 workers, total product (measured in units per day) and average product and marginal product of the third worker (measured in units per worker) are

A) 19, 6 1/3, and 9 respectively.
B) 3, 19, and 6 1/3 respectively.
C) 19, 3, and 9 respectively.
D) 19, 6 1/3, and 7 respectively.
**Answer: D**
Topic: Parallel MyEconLab, Cost Curves
Skill: Analytical
175) In the above figure, which of the following statements is FALSE?
   A) The total fixed cost curve is curve C.
   B) Total variable cost and total cost both increase as output increases.
   C) Marginal cost is equal to the slope of curve A.
   D) The vertical gap between curves A and B is equal to average fixed cost.
Answer: D

Topic: Parallel MyEconLab, Cost Curves
Skill: Analytical
176) In the above figure, which of the following statements is FALSE?
   A) Average fixed cost decreases as output decreases.
   B) The vertical gap between curves B and C equals marginal fixed cost.
   C) The vertical gap between curves B and C gets smaller as AFC decreases.
   D) Curve A is the marginal cost curve.
Answer: B

Topic: Parallel MyEconLab, Change in the Price of a Resource
Skill: Analytical
177) Poppy Lipstick is a lipstick producer. A decrease in the rent paid by Poppy Lipstick
   A) shifts its $TFC$ curve downward but not its $TVC$ curve.
   B) shifts both its $TFC$ curve and its $TVC$ curve downward.
   C) does not shift its $TFC$ curve but shifts its $TVC$ curve upward.
   D) does not shift its $TFC$ curve but shifts its $TVC$ curve downward.
Answer: A
CHAPTER 10

**Topic: Parallel MyEconLab, Change in the Price of a Resource**

**Skill: Analytical**

178) Sticky Cakes is a bakery. A decrease in the wage rate that Sticky Cakes pays its workers

A) does not shift its MC curve or its ATC curve.
B) shifts its MC curve downward but not its ATC curve.
C) shifts both its MC curve and its ATC curve downward.
D) does not shift its MC curve but shifts its ATC curve downward.

**Answer: C**

— MyEconLab Questions

**Topic: Goal**

**Level 1: Definitions and Concepts**

179) All the decisions made by people who operate firms have one overriding objective, which is to

A) make maximum attainable profit
B) maximize the firm’s total revenue
C) maximize the firm’s market share
D) maximize the quantity that the firm sells

**Answer: A**

**Topic: Average Product of Labor**

**Level 1: Definitions and Concepts**

180) Average product of labor is equal to

A) total product multiplied by the quantity of labor employed.
B) the total product produced
C) the quantity of labor employed divided by total product
D) total product divided by the quantity of labor employed

**Answer: D**

**Topic: Diminishing Marginal Returns**

**Level 1: Definitions and Concepts**

181) The law of diminishing marginal returns says that as the firm uses more of _____, with a given quantity of _____, _____ product of the variable input eventually diminishes.

A) a fixed input; variable inputs; marginal
B) all inputs; capital; average
C) a variable input; fixed inputs; average
D) a variable input; fixed inputs; marginal

**Answer: D**

182) As more and more of the _____ input is used, the total product curve increases quickly at first because _____ product increases and then more slowly because _____.

A) fixed; average; average product decreases
B) variable; average; average product reaches a maximum
C) variable; marginal; marginal product diminishes
D) fixed; marginal; marginal product reaches a maximum

**Answer: C**

**Topic: Total Cost**

**Level 1: Definitions and Concepts**

183) Which of the following statements is correct?

A) As output increases, total cost and total fixed cost increase by the same amount.
B) As output increases, total cost and total fixed cost increase but not necessarily by the same amount.
C) As output increases, total cost increases and total fixed cost decreases.
D) Total fixed cost plus total variable cost equals total cost.

**Answer: D**

**Topic: Marginal Cost**

**Level 1: Definitions and Concepts**

184) Marginal cost is the increase in total _____ that results from a one-unit increase in _____.

A) fixed cost; the fixed input
B) cost; output
C) variable cost; the variable input
D) fixed cost; output

**Answer: B**

**Topic: Average Fixed Cost**

**Level 1: Definitions and Concepts**

185) Which of the following statements is true?

A) Average fixed cost equals average total cost plus average variable cost.
B) Average variable cost is always greater than average fixed cost.
C) Average fixed cost equals total fixed cost divided by total output.
D) Average total cost always falls as output increases.

**Answer: C**
Topic: Long Run
Level 1: Definitions and Concepts
186) Which of the following statements is true?
A) In the long run, the average cost curve is always downward sloping.
B) In the long run, the quantities of all inputs are fixed.
C) In the long run, the firms’ fixed costs are greater than its variable costs.
D) In the long run, all costs are variable costs.
Answer: C

Topic: Long-Run Average Cost Curve
Level 1: Definitions and Concepts
187) In the long run, the average cost curve ____.
A) is the same as the short-run average variable cost curves because in the long run all costs are variable costs
B) is made up of the average total cost curves for which that quantity of capital has the lowest average total cost
C) is vertical
D) touches all the short-run average total cost curves at their minimum points
Answer: C

Topic: Increasing Returns to Scale
Level 1: Definitions and Concepts
188) With given input prices, increasing returns to scale are present when the percentage increase in output ____.
A) is zero
B) exceeds the percentage increase in all inputs
C) is positive
D) equals the percentage increase in all inputs
Answer: B

Topic: Short Run and Long Run
Level 2: Using Definitions and Concepts
189) In economics, the short run is the time frame in which the quantities of ____ and the long run is the period of time in which ____.
A) some resources are variable; the quantities of all resources are fixed
B) all resources are variable but technology is fixed; technology is variable
C) all resources are fixed; the quantities of all resources can be varied
D) some resources are fixed; the quantities of all resources can be varied
Answer: D

Topic: Average Product of Labor and Marginal Product of Labor
Level 2: Using Definitions and Concepts
190) Which of the following statements is true?
A) When marginal product is less than average product, average product is rising.
B) When marginal product is less than average product, average product is falling.
C) When marginal product is falling, average product is falling.
D) When marginal product is rising, average product is falling.
Answer: B

Topic: Diminishing Marginal Returns
Level 2: Using Definitions and Concepts
191) Diminishing marginal returns start when as output increases,
A) total product reaches a maximum.
B) average product begins to decrease.
C) average product reaches a maximum.
D) marginal product begins to decrease.
Answer: D

Topic: Relationship Between Marginal Product and Average Product
Level 2: Using Definitions and Concepts
192) Which of the following statements is true?
A) If average product equals marginal product, average product falls.
B) If marginal product equals average product, average product is a maximum.
C) If marginal product equals average product, marginal product is a maximum.
D) If marginal product exceeds average product, marginal product rises.
Answer: B

Topic: Relationship Between Marginal Cost and Average Total Cost
Level 2: Using Definitions and Concepts
193) If marginal cost is below ____, then ____ is ____.
A) average total cost; average total cost; falling
B) average total cost; average variable cost; falling
C) average total cost; marginal cost; falling
D) average total cost; marginal cost; rising
Answer: A
**Topic: Relationship Between Marginal Cost and Average Variable Cost**

**Level 2: Using Definitions and Concepts**

194) If marginal cost exceeds average variable cost, then _____ cost is _____.
A) average total; at a maximum  
B) average total; falling  
C) average variable; rising  
D) average fixed; at a maximum

**Answer: C**

**Topic: Relationship Between Marginal Cost and Average Total Cost**

**Level 2: Using Definitions and Concepts**

195) The marginal cost curve passes through the ____ points of the ____ cost curve and the ____ cost curve.
A) minimum; average total; average variable  
B) minimum; average total; average fixed  
C) maximum; total cost; total variable  
D) minimum; average variable; average fixed

**Answer: A**

**Topic: Economies and Diseconomies of Scale**

**Level 2: Using Definitions and Concepts**

196) When a firm experiences economies of scale, its _____ cost curve slopes _____.
A) long-run average; downward  
B) short-run average total; downward  
C) short-run marginal cost; downward  
D) long-run average; upward

**Answer: A**

**Topic: Production Function**

**Level 2: Using Definitions and Concepts**

198) The firm’s production function is the relationship between the ____ and _____.
A) output produced; the quantities of all inputs  
B) maximum output attainable; the quantity of variable inputs  
C) possible range of maximum output; the quantities of both labor and capital  
D) maximum output attainable; the quantities of both labor and capital

**Answer: D**

<table>
<thead>
<tr>
<th>Labor (workers per day)</th>
<th>Quantity (T shirts per day)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>35</td>
</tr>
</tbody>
</table>

**Topic: Average Product of Labor and Marginal Product of Labor**

**Level 3: Calculations and Predictions**

199) The table above shows some data that describe Terry’s T-Shirts’ total product when Terry’s has 1 sewing machine. An increase in the number of workers from 1 to 2 a day increases average product of labor from ____ T shirts per worker and marginal product of labor is ____ T shirts per worker.
A) 10 to 11; 22  
B) 10 to 22; 12  
C) 10 to 22; 22  
D) 10 to 11; 12

**Answer: D**

**Topic: Diminishing Marginal Product of Labor**

**Level 3: Calculations and Predictions**

200) The table above shows some data that describe Terry’s T-Shirts’ total product when Terry’s has 1 sewing machine. Diminishing marginal returns begin when the ____ is employed.
A) second worker  
B) fifth worker  
C) fourth worker  
D) third worker

**Answer: D**
Topic: Average Product of Labor and Marginal Product of Labor
Level 3: Calculations and Predictions
201) When marginal product of labor is a maximum, average product of labor is ____.
A) a maximum
B) increasing
C) decreasing
D) equal to marginal product
Answer: B

<table>
<thead>
<tr>
<th>Labor (workers per day)</th>
<th>Quantity (T shirts per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</tr>
<tr>
<td>5</td>
<td>35</td>
</tr>
</tbody>
</table>

Topic: Total Fixed Cost and Marginal Cost
Level 3: Calculations and Predictions
203) The table above gives the cost of producing T-shirts. The total fixed cost is ____ and the marginal cost of increasing production from 5 to 6 T-shirts is ____.
A) $20; $6
B) $20; $10
C) $10.40; $8
D) unable to be determined; $8
Answer: B

<table>
<thead>
<tr>
<th>Output (T shirts per hour)</th>
<th>Total cost (dollars)</th>
<th>Total variable cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>6</td>
<td>60</td>
<td>40</td>
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</tbody>
</table>

Topic: Average Fixed Cost and Average Variable Cost
Level 3: Calculations and Predictions
204) The table above gives the cost of producing T-shirts. When 5 T-shirts are produced, the average fixed cost is ____ and the average variable cost is ____.
A) $4; $10
B) $10; $6
C) $5; $3
D) $4; $6
Answer: D

Topic: Fixed Cost and Marginal Cost
Level 3: Calculations and Predictions
205) If total fixed cost increases, then the average total cost curve ____ and the marginal cost curve ____.
A) does not shift; shifts upward
B) shifts upward; shifts upward
C) does not shift; does not shift
D) shifts upward; does not shift
Answer: D

Topic: Cost Curves and Product Curves
Level 3: Calculations and Predictions
206) If as output increases average product increases, then ____.
A) average total cost decreases
B) average fixed cost decreases
C) marginal cost decreases
D) average variable cost decreases
Answer: D
207) An increase in the quantity of fixed inputs shifts the average total cost curve ____ if ____ exist.
   A) downward; diseconomies of scale
   B) upward; constant returns to scale
   C) downward; economies of scale
   D) upward; economies of scale
   Answer: B

208) If all inputs are increased by 5 percent and output increases by 8 percent, then the
   A) firm experiences constant returns to scale
   B) long-run average cost curve slopes downward
   C) long-run average cost curve shifts downward
   D) firm experiences diseconomies of scale
   Answer: B

209) Diminishing marginal returns occur when ____.
   A) the average product of the variable input eventually diminishes
   B) the marginal product of an additional worker is less than the marginal product of the previous worker hired
   C) the firm hires cheap less-skilled workers in place of expensive high-skilled workers
   D) total product eventually diminishes
   Answer: B

210) Average total cost minus average variable cost ____ as output increases because ____ as output increases.
   A) decreases and then increases; marginal cost initially decreases and then increases
   B) decreases; average fixed cost decreases
   C) decreases; marginal returns diminish
   D) decreases; economies of scale are present
   Answer: B

211) The output at which average product is a maximum is the same output at which ____ is a minimum.
   A) average fixed cost
   B) average variable cost
   C) average total cost
   D) marginal cost
   Answer: B

212) The output at which average variable cost is a minimum is ____ than the output at which ____ is a minimum.
   A) the same as; average total cost
   B) the same as; marginal cost
   C) less than; average total cost
   D) less than; marginal cost
   Answer: C

213) If marginal cost is less than average variable cost and output increases, average total cost ____ and average variable cost ____.
   A) increases; increases
   B) decreases; decreases
   C) decreases; increases
   D) increases; decreases
   Answer: B

214) If as output increases marginal cost exceeds average variable cost but is less than average total cost, average total cost ____ and average variable cost ____.
   A) increases; decreases
   B) decreases; decreases
   C) increases; increases
   D) decreases; increases
   Answer: D
215) The vertical distance between the total variable cost curve and the total cost curve ____ as output increases; the vertical distance between average variable cost curve and the average total cost curve ____ as output increases.
A) decreases; remains the same
B) is constant; becomes smaller
C) increases; becomes smaller at first but then increases
D) increases; remains the same
Answer: B

216) As output increases, total cost ____ , total fixed cost ____ , and total variable cost ____.
A) increases; increases; increases
B) increases; increases; does not change
C) increases; does not change; increases
D) does not change; increases; increases
Answer: C

217) If the average total cost of producing 20 sweaters an hour falls when the firm doubles all its inputs, then the
A) short-run average total cost curve shifts upward because all inputs have increased.
B) firm moves along its short-run average total cost curve.
C) firm experiences economies of scale.
D) long-run average cost curve shifts downward.
Answer: C